

# (12) UK Patent Application (19) GB (11) 2 225 840 (13) A

(43) Date of A publication 13.06.1990

(21) Application No 8923507.1

(22) Date of filing 18.10.1989

(30) Priority data

(31) 8824604

(32) 20.10.1988

(33) GB

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(51) INT CL<sup>5</sup>

B67D 1/14

(52) UK CL (Edition K)

F2V VP182

U1S S1111

(56) Documents cited

GB 2206185 A

GB 2168129 A

GB 1105265 A

(58) Field of search

UK CL (Edition J) F2V VP182 VV9 VX8

INT CL<sup>4</sup> B67D, F16K

Online databases: WPI

(54) Tap particularly for beer

(57) A beverage dispensing tap particularly intended for dispensing low carbonated beers incorporates a piston 2 movable within a bore in the tap, the piston having an 'O' ring 14 sealing on a tapered portion 15 of the bore of the tap and an extension nose 21 which extends beyond the sealing 'O' ring and incorporates spiral grooves to agitate beer passing through the tap when the tap is in partly open position with the sealing ring raised from its seat and the nose remaining in reduced portion 17 of the bore. When the tap is fully open the nose is withdrawn from the reduced bore portion. Movement of the piston to the partly open position can be achieved by moving handle 3 in the opposite direction to arrow 8 as well as by movement in the direction of the arrow.

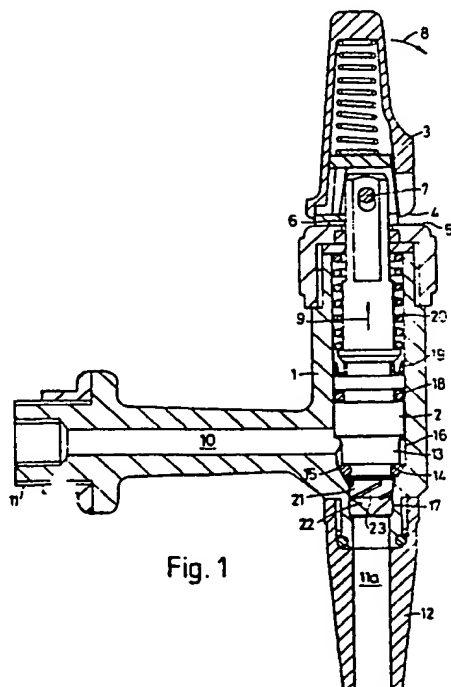


Fig. 1

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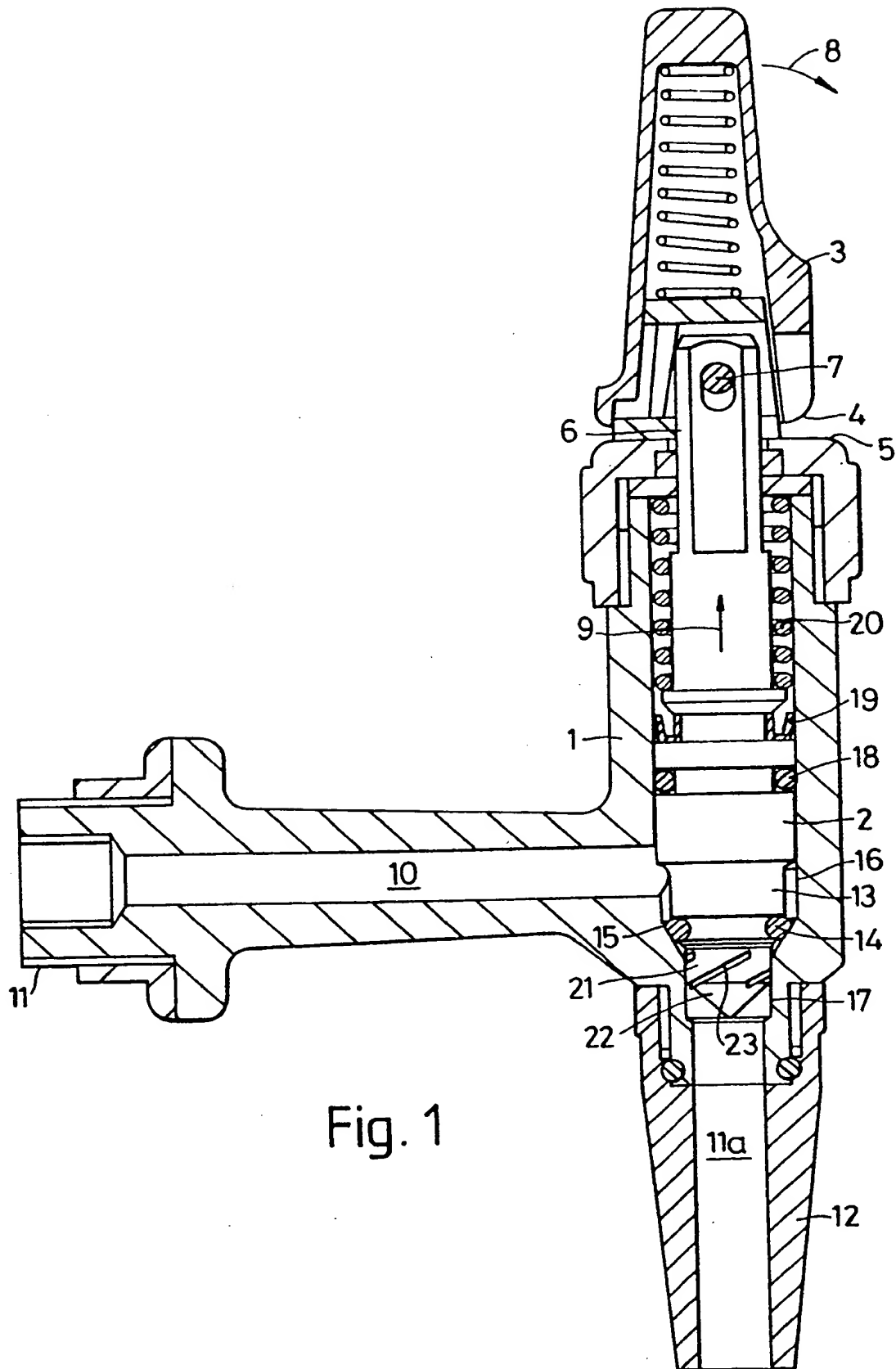


Fig. 1

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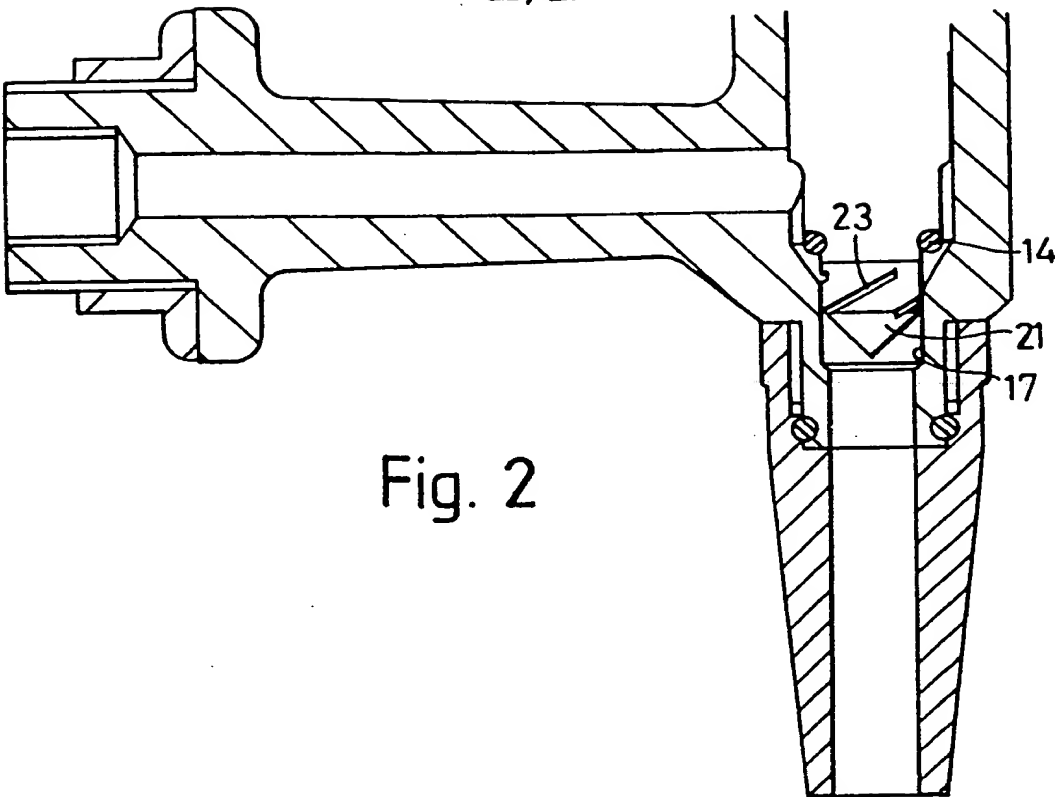


Fig. 2

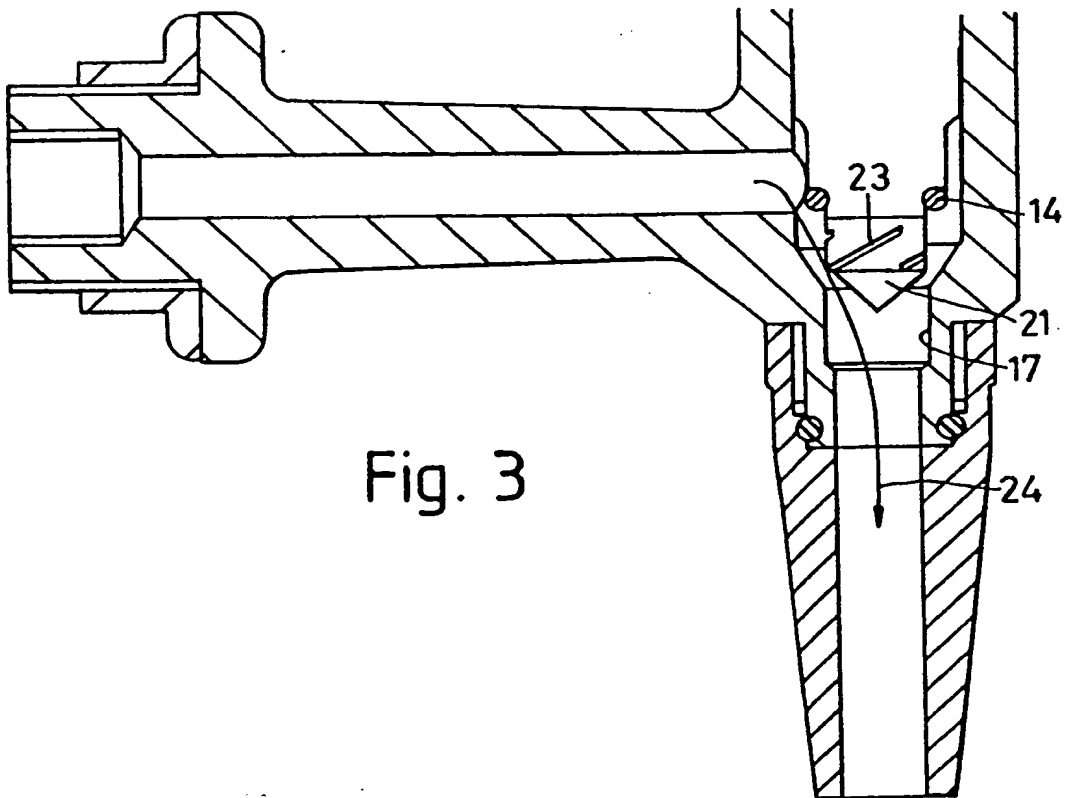


Fig. 3

Tap

This invention relates to beverage dispensing taps and has particular, but not exclusive, reference to beverage dispensing taps for dispensing beer containing dissolved gas and further has particular, but not exclusive, reference to dispensing beers known as low carbonated beers.

It is very well known to dissolve gas such as carbon dioxide in beers to help preserve the beer from oxidation and to add a sparkle to the beer when it is dispensed into a glass. Release of the carbon dioxide also results in the formation of a head on the beer which is attractive to the customer.

In highly carbonated beers, such as beers containing over 2 volumes of carbon dioxide gas for each volume of liquid beer, the gas readily comes out of solution and forms a cream or fob which produces the head on the beer. In many cases with highly carbonated beers the problem is one of reducing excessive fobbing or minimising excessive fobbing to produce an acceptable beer for the customer.

However, with low carbonated beer such as beers containing less than 2 volumes of carbon dioxide gas for each one volume of liquid beer, the problem is not one of excessive formation of head cream or fob, but one in which it is difficult to produce an acceptable head in the glass.

The present invention is concerned with a dispense tap which is capable of producing a head on top of a previously poured quantity of low carbonated beers as well as being suitable for dispensing more easily creamed or high carbonated beers.

By the present invention there is provided a beverage dispensing tap for dispensing beer and/or

other liquids containing dissolved gas, the tap including a body having a bore therein interconnecting a dispense nozzle and a conduit for leading beer to the tap, the bore including a portion of a larger internal diameter, a portion of a smaller internal diameter and a tapered substantially frusto-conical surface interconnecting the two bore portions, a piston movable in the body, the piston having a sealing surface adapted to engage the frusto-conical surface to seal the tap, the piston including a nose extending beyond the sealing surface, so that, in the sealing condition the nose is located in the smaller diameter portion of the bore, the nose having a cylindrical portion with at least one groove on the cylindrical surface of the nose, the nose and the bore being so dimensioned that as the tap is opened by movement of the piston in the body, the cylindrical portion of the nose is initially within the smaller diameter portion of the bore, and as the tap is fully opened the cylindrical portion of the nose is located within the frusto-conical portion and/or the larger diameter portion of the bore.

There may be a plurality of grooves on the cylindrical surface of the nose. The grooves may be helically disposed on the surface of the nose. The nose may incorporate a conical portion. The tap body may incorporate a nozzle screwed to the body.

By way of example embodiments of the present invention will now be described with reference to the accompanying drawings of which

FIGURE 1 shows a tap in accordance with the invention, partly in section,

FIGURE 2 shows the tap of Figure 1 with the valve cracked open, and

FIGURE 3 shows the tap of Figure 1 fully open.

Referring to Figure 1, this shows a tap having a body 1 containing a piston 2, movable within the body by means of a handle 3 which pivots on a camming surface 4. The camming surface engages on the upper headworks 5 which secures the piston in the tap. The piston 2 incorporates an extension member 6 which engages a pin 7 on the handle so that as the handle 3 is pivoted in the direction of arrow 8 the piston is lifted upwards in the direction of arrow 9. The body 1 incorporates a main feed channel 10 through which beer is fed when the tap is secured by the fitting portion 11 to a conventional female member on a bore. The feed channel 10 leads to an outlet channel 11 which passes through a nozzle 12 into a suitable receptacle such as a glass. The piston 2 incorporates a reduced diameter portion 13 which carries an 'O' ring 14 to seal on a chamfered or frusto-conical surface 15. The body of the tap can be seen to have a larger diameter portion 16 and a smaller diameter portion 17 interconnected by the frusto-conical surface 15. It will be seen that the 'O' ring 14 seals the conduit 11a from the conduit 10. A further 'O' ring 18 seals the upper portion of the piston and prevents beer escaping into the mechanism of the tap. A 'U' section washer 19 acts to protect the 'O' ring 18 and keep it clean. A spring 20 maintains the piston 2 in the normally closed condition and the piston can only be opened in practice by movement of the handle 3 in the direction of arrow 8.

The piston incorporates a cylindrical nose portion 21 which extends beyond the 'O' ring seal 14 into the smaller diameter bore 17. The piston also incorporates a conical end 22 to the nose and on the

cylindrical portion 21 of the nose there are formed helical grooves 23.

When the piston is in the closed position as shown in Figure 1, the sealing 'O' ring 14 closes off the tap and the nose 21 merely sits in the smaller diameter bore 17.

When the tap is opened slightly the piston moves up and at some stage reaches the position shown in Figure 2. In this position beer can pass the 'O' ring 14 but the nose 21 restricts flow of beer through the narrower diameter portion 17 and the beer passes principally through the helical grooves 23 and is given a swirling action by virtue of the direction of the grooves. This swirling action results in creaming of the beer and the formation of a head on the beer. However, movement of the piston upwardly in response to movement of the handle 3 brings the piston eventually to the position shown in Figure 3 where beer can freely pass through the tap along the lines of arrow 24.

The tap of the invention therefore is capable of being fully opened to the position shown in Figure 3 and dispensing beer in a relatively non-turbulent manner. However, when the beer tap is closed to the position shown in Figure 2 a great deal of turbulence is generated by means of the grooves 23 which results in creaming of the beer.

Alternatively, the position shown in Figure 2 can be obtained by pushing the handle 3 in the opposite direction to the arrow 8. By virtue of the movement being limited by a stop within the handle 3, the piston 13 cannot be lifted higher than the position shown in Figure 2. This enables the position shown in Figure 2 to be achieved reliably enabling the

turbulence to be generated before or after the nonturbulent flow as shown in Figure 3. By this manner the tap is capable of producing a head on top of a previously poured quantity of beer.

5           The tap is therefore capable of creaming low carbonated beers in a better manner than taps known heretofore. However, the tap is equally capable of dispensing highly carbonated beers in a similar manner.

10           Although helical grooves are shown in the drawings straight grooves can be used, the angle and size of the grooves can be so produced by simple experiment as to give optimum presentation to an individual beverage.



## CLAIMS:

1. A beverage dispensing tap for dispensing beer and/or other liquids containing dissolved gas, the tap including a body having a bore therein interconnecting a dispense nozzle and a conduit for leading beer to the tap, the bore including a portion of a larger internal diameter, a portion of a smaller internal diameter and a tapered substantially frusto-conical surface interconnecting the two bore portions, a piston movable in the body, the piston having a sealing surface adapted to engage the frusto-conical surface to seal the tap, the piston including a nose extending beyond the sealing surface, so that, in the sealing condition the nose is located in the smaller diameter portion of the bore, the nose having a cylindrical portion with at least one groove on the cylindrical surface of the nose, the nose and the bore being so dimensioned that as the tap is opened by movement of the piston in the body, the cylindrical portion of the nose is initially within the smaller diameter portion of the bore, and as the tap is fully opened the cylindrical portion of the nose is located within the frusto-conical portion and/or the larger diameter portion of the bore.
2. A tap as claimed in Claim 1 in which there are a plurality of grooves on the cylindrical surface of the nose.
3. A tap as claimed in Claim 1 or 2 in which the groove or grooves are helically disposed on the surface of the nose.
4. A tap as claimed in any one of Claims 1 to 3 in which the nose incorporates a conical portion tapering in a downstream direction.

5. A tap as claimed in any one of Claims 1 to 4 in which the tap body incorporates a nozzle screwed to the body.
6. A beverage tap substantially as herein
- 5 described with reference to and as illustrated by the accompanying drawings.